STATE OF COLORADO

DIVISION OF MINERALS AND GEOLOGY
Department of Natural Resources
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DEPARTMENT OF NATURAL RESOURCES
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Governor
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Division Director

FACSIMILE TRANSMITTAL COVER SHEET

The FAX Machine telephone number is (303) 832-8106

TO: Carol Russell

COMPANY/AGENCY: EPA

FAX NUMBER: ~~391-6952~~ 312-7084

FROM: Allen Sorenson

DATE: 3-20-96 **NUMBER OF PAGES TO FOLLOW:** 7

PROGRAM: MINS. X COAL ____ AML ____ M. SAFETY ____

TIME TO BE SENT: ASAP X or NIGHT RATE ____

MESSAGE TO RECIPIENT:

Attached are memoranda providing details on how DMG will inspect Upper Animas mitigation projects undertaken by Sunnyside Gold, and information related to DMG design review for proposed bulkhead hydraulic seals. Please call w/ questions.

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DEPARTMENT OF NATURAL RESOURCES

DATE: February 13, 1996

TO: Bill Goodhard

FROM: Allen Sorenson AS

RE: Mitigation Work Plans for Sunnyside Settlement

It is the understanding of the Division of Minerals and Geology (DMG) that the settlement agreement between Sunnyside Gold Corporation (SGC) and the Water Quality Control Division (WQCD) will include provisions that DMG will inspect pre-Mined Land Reclamation Act mining disturbance mitigation projects to be completed by SGC under the settlement agreement, with the purpose of these inspections being to make a determination as to whether or not the mitigation completed meets the requirements of selected performance standards of the Hard Rock/Metal Mining Rules and Regulations of the Mined Land Reclamation Board. In order for DMG to make such a determination, a basic up-front understanding of the mitigation project work plans is necessary. DMG has reviewed the work plans that you provided on February 12, 1996, and makes the following findings and requests for additional information:

1. A final inspection of the Sunnyside Mine Pool Mitigation project is not necessary for obvious reasons. A determination of the effectiveness of this project could be made based on reports detailing the amount and timing of alkaline solution added to the mine pool correlated with the rate of rise of the mine pool, and, possibly based on mine pool samples taken from the 1 inch pipes through the American and Terry Tunnel bulkheads. Inspections of the alkaline solution injection system could be completed by DMG during preparation and operation of the system. Also, an inspection to assess the dismantling, removal, and clean-up of the solution mixing and pumping facilities in Sunnyside Basin may be appropriate.

2. The Mine Waste Dump work plan, detailing mitigation of mine waste and tailing near the American Tunnel portal location, provides the basic information necessary to allow DMG to inspect the site and make a determination as to whether or not the project has been completed and meets the requirements of the selected performance standards.

3. The work plan detailing removal of Surface Mill Tailings at Eureka provides the basic information necessary to allow DMG to inspect the site and make a determination as to whether or not the project has been completed and meets the requirements of the selected performance standards. It is suggested that a determination as to

whether or not revegetation efforts would be appropriate for any of the land affected by this project may be made in consultation with DMG at a point in time near the end of the tailing removal project, based on site specific observations. An inspection of sedimentation controls during the tailing removal project may also be appropriate.

4. The work plan detailing relocation of the Gold Prince Mill Tailings and Waste Dump provides the basic information necessary to allow DMG to inspect the site and make a determination as to whether or not the project has been completed and meets the requirements of the selected performance standards. It is suggested that a site inspection may be appropriate during the mitigation project to facilitate DMG's concurrence with the disposal site selected, and to evaluate the soils available at the selected disposal site for capping of the relocated waste rock and tailing. Also, it is DMG's understanding that the modifications to the existing Gold Prince Mine closure in order to make it a water impounding closure, will essentially result in establishment of a non-structural bulkhead. It is also DMG's understanding that available mine maps indicate that only a small amount of hydrostatic head (approximately 15 feet) would build behind the non-structural bulkhead before the impounded water would spill into the Sunnyside Mine workings. Please report on the feasibility of monitoring the pressure head behind the Gold Prince bulkhead to provide assurance that unanticipated pressures that may threaten the integrity of the bulkhead are not developing.

5. The work plan detailing construction of run on control measures and mine waste relocation at the Longfellow Koehler site provides the basic information necessary to allow DMG to inspect the site and make a determination as to whether or not the project has been completed and meets the requirements of the selected performance standards. It is suggested that a site inspection may be appropriate during the mitigation project to facilitate DMG's concurrence with the disposal site selected, to evaluate the soils available at the selected disposal site for capping of the relocated waste rock, and to evaluate the feasibility of run on controls. It may also be appropriate for DMG to review the designs for proposed lined diversion ditches prior to their installation.

6. The work plan detailing removal of Boulder Creek Tailings provides the basic information necessary to allow DMG to inspect the site and make a determination as to whether or not the project has been completed and meets the requirements of the selected performance standards.

7. The work plan detailing relocation of the Pride of the West Tailings provides the basic information necessary to allow DMG to inspect the site and make a determination as to whether or not the project has been completed and meets the requirements of the selected performance standards. Relocation of the tailing to the

Howardsville Mill tailing pond currently permitted by the Mined Land Reclamation Board would require a modification, probably a technical revision, to that permit. An inspection of sedimentation controls during the tailing removal project may be appropriate.

8. The work plan detailing grading and vegetation establishment on the Columbus Mine Dumps provides the basic information necessary to allow DMG to inspect the site and make a determination as to whether or not the project has been completed and meets the requirements of the selected performance standards. In order to evaluate the adequacy of hydraulic bulkhead seals in the Columbus Mine Portals, if such seals are determined to be feasible, DMG would have to be provided with designs for the bulkheads prior to installation, and may also need to conduct one or more inspections of the bulkhead locations during preparation and installation.

9. The work plan detailing grading and vegetation establishment on the London Mine Dumps provides the basic information necessary to allow DMG to inspect the site and make a determination as to whether or not the project has been completed and meets the requirements of the selected performance standards. In order to evaluate the adequacy of hydraulic bulkhead seals in the Columbus Mine Portals, if such seals are determined to be feasible, DMG would have to be provided with designs for the bulkheads prior to installation, and may also need to conduct one or more inspections of the bulkhead locations during preparation and installation.

The tailing and mine waste relocation, grading, or removal projects proposed in the work plans include measures to "add high pH material to stabilize pH to near neutral". Please provide details on the method for determination of the appropriate dosing rate for high pH material to be added to the mine waste or tailing, and also provide details on how the high pH material will be mixed into and blended with the mine waste or tailing.

DMG recognizes that our primary involvement in the implementation of the work plans will be to conduct inspections of projects sites after completion to determine if the requirements of selected performance standards have been accomplished. However, as you can discern from the foregoing comments, SGC will have to keep DMG apprised of the status of on-going mitigation projects in order to facilitate some inspections deemed necessary while the mitigation projects are underway.

cc: Sarah Johnson, WQCD
Steve Brown, AGO

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SUNNYSIDE GOLD CORPORATION
AN ECHO BAY COMPANY

P.O. Box 177 • Silverton, CO 81433
Phone (303) 387-5533 • Telecopy (303) 387-5310

To: Allen Sorenson
From: Bill Goodhard
RE: Submittal of requested additional information for Mitigation Work Plans
Date: March 11, 1996

This submittal addresses your February 13, 1996 letter outlining findings and requests for additional information concerning the mitigation project work plans submitted by Sunnyside Gold Corporation (SGC) under the settlement agreement with the Water Quality Control Division (WQCD).

The role of the Division of Minerals and Geology (DMG) will be to determine whether or not the completed mitigation projects meets the selected performance standards of the Hard Rock/Metal Mining Rules and Regulations of the Mined Land Reclamation Board as stated in your letter. Effective communication between SGC and DMG will be required in order to facilitate inspections at the points during the projects deemed appropriate by DMG and promote efficient construction. To this end SGC will maintain contact with DMG's designated representative(s); to disseminate project(s) status and field observations; to schedule inspections at the appropriate times and to facilitate concurrence with project(s) direction and satisfactory completion.

The following addresses your request for additional information where applicable.

1. Sunnyside Mine Pool Mitigation

   The goals for this project will be to inject water into the mine pool in a quantity to speed physical equilibrium and add the alkalinity in the quantity required to raise the mine pool pH to target levels from all water sources. The configuration of the mine will provide mixing and distribution.
   SGC will inform DMG of project progress in order for DMG to schedule inspections during preparation and operation of the system and after project work is completed.

2. Mine Waste Dump

   SGC will coordinate an inspection of the project site with DMG to determine whether the project has been completed and meets the requirements of the selected performance standards.

3. Surface Mill Tailings at Eureka

The reason for not planning to establish vegetation as part of the project was based on a comparison to the land surrounding the remediation site. It is either a barren talus slope or an active alluvial fan. SGC proposes that the post remediation land use be similar to that of the surrounding area. This type of observation can probably be made during the first site inspection. SGC will advise DMG when the sedimentation controls are in place and upon project completion so that DMG can schedule inspections for the appropriate times.

4. Gold Prince Mill Tailings and Waste Dump

SGC will inform DMG of progress on this project and of SGC's selection of a disposal site and availability of soil material for capping the material so DMG can schedule a site inspection prior to starting the waste material removal process.
Attached is a copy of the old mine workings map on which SGC bases its conclusion on that water will back up approximately 15 feet before dropping into the Sunnyside Mine Pool resulting in only minor hydrostatic forces on the bulkhead. The Gold Prince portal is definitely higher than the Lake Emma outlet. SGC has not evaluated this connection but will attempt to. If the status of this connection cannot be confirmed by SGC, a pressure gauge will be installed and monitored until the reading stabilizes to provide assurance that the integrity of the bulkhead is not compromised.

5. Longfellow Koehler

SGC will inform DMG of progress on this project and of SGC's selection of a disposal site, availability of soils and feasibility or plans for run on controls and ditches so DMG can schedule a site inspection prior to starting the waste material removal process.

6. Boulder Creek Tailings

SGC will update DMG on project status and upon completion so that an inspection can be scheduled to determine whether the selected performance standards have been met.

7. Pride of the West Tailings

SGC will have full owner approval prior to starting this project. This will include any TR approval that the owners may need prior to implementing this project. SGC will advise DMG on project status so that the appropriate inspections can be scheduled.

8. Columbus

SGC will determine the feasibility of installing bulkheads and if determined feasible, design the bulkheads. These designs will be submitted to DMG prior to installation. DMG will be kept informed as to the progress on this project so that inspections can be scheduled at the appropriate times.

9. London

SGC will determine the feasibility of installing bulkheads and if determined feasible, design the bulkheads. These designs will be submitted to DMG prior to installation. DMG will be kept informed as to the progress on this project so that inspections can be scheduled at the appropriate times.

The appropriate dosage rate, to stabilize the tailings or mine waste to a near neutral pH, will be determined for each project where it is proposed by;

1) taking a composite sample representative of the material to be pH stabilized.
2) taking a paste pH of the material to determine if alkaline material addition is required.
3) adding measured amounts of alkaline material to a known weight of material, mixing and then taking a paste pH of the material. This step will be repeated until the paste pH of the mixture is near neutral.
4) extrapolating the quantity of alkaline material required to raise the pH of the material to near neutral in the bench test to equipment size lots which will be used in the removal process.
5) this dosage rate may be checked and changed during the project.

Addition of alkaline material, as well as mixing and blending will be performed at the disposal site with the equipment used for placement. In most cases, the material will be placed in lifts. The material will be placed, then the appropriate amount of alkaline material will be spread across the top of the lift. This alkaline material will be worked into the lift by blending and mixing with the knock down equipment. This may result in a deposit that bonds from a higher pH at the top to a lower pH below. This is viewed as being acceptable because any percolating water through the material will serve to equalize and distribute any inequities in the initial placement of the alkaline material.

Please contact me if the above does not adequately address your requests for additional information or if you have any questions. SGC looks forward to working closely with DMG to complete these projects.

Sincerely,

Bill Goodhard
Resident Manager

cc: Sarah Johnson